R E P O R T R E S U M E S

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RESEARCH VISIBILITY. VOCATIONAL EDUCATION IS PEOPLE WITH EDUCATIONAL NEEDS BEYOND THE HIGH SCHOOL.

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THE PROJECTS SELECTED FOR REVIEW WERE FUNDED BY THE DIVISION OF COMPREHENSIVE VOCATIONAL EDUCATION RESEARCH AND BEAR ON ANY ASPECT OF PROGRAM PLANNING, ORGANIZATION, DEVELOPMENT, DEMONSTRATION, INNOVATION, AND EVALUATION FOR YOUTH AND ADULTS WITH EDUCATIONAL NEEDS BEYOND HIGH SCHOOL. TEN ITEMS ARE REVIEWED UNDER THE TOPICS--ASSESSIBILITY TO AREA PROGRAMS, EVOLVING CURRICULUMS AND LEVELS, AND FORCES INFLUENCING QUALITY STANDARDS. FOURTEEN ADDITIONAL REVIEWS PERTAINING TO THE AREA "HIGH SCHOOL AGE YOUTH," PRESENTED IN THE PRECEDING ISSUE, ARE INCLUDED. "PLAIN TALK," A CONTINUING COLUMN BY THE AUTHOR, DISCUSSES GUIDELINES RELATING TO CRITICAL DECISIONS IN RESEARCH AND PROGRAM PLANNING. A BIBLIOGRAPHY LISTS 60 OTHER PROJECTS AND ACTIVITIES COMPLETED AND IN PROCESS. THIS ARTICLE IS PUBLISHED IN THE "AMERICAN VOCATIONAL JOURNAL," VOLUME 42, NUMBER 10, OCTOBER 1967. (EM)

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RESEARCH VISIBILITY

SYNTHESIS / APPLICATION / DISSEMINATION

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•"Research Visibility" is a research project of the American Vocational Associatic... The purpose is to give visibility to significant research: experimental, demonstration and pilot programs; upgrading institutes, seminars and workshops; and other leadership development activities for teachers, supervisors and administrators. The "Research Visibility" report synthesizes important projects which have been reviewed, selected and analyzed for their value to vocational, technical and practical arts educators, guidance personnel, and other leaders in education, manpower and related fields. A composite bibliography of significant research and development materials is included.

The project is cooperatively financed by the American Vocational Association and a Vocational Education Act of 1963 grant (OEG 2-7-070633, project 7-0633; "Synthesis and Application of Research Findings in Vocational Education").

VOCATIONAL EDUCATION IS PEOPLE . . . With Educational Needs Beyond the High School

THE PRICELESS INGREDIENT . . .

The greatness of a nation and the well being of its people depend on the degree to which its human potential is prepared to lead continuously useful and productive lives. This concern for the development of the full spectrum of people to their maximum capacity is the base upon which four successive issues of "Research Visibility" were planned.

Special Needs . . . Special Programs

The Panel of Consultants on Vocational Education in its study and deliberations had evidence that over many years vocational educators and public school systems had developed conventional programs of vocational education for youth and adults of varying interests, abilities, and ages. These were limited, primarily, by educational, legal regulations and financial conditions prevailing at the time.

Emergency Training Cycles

Still other special programs and services were developed to meet a whole host of National emergencies. Records show that in periods of economic recession, with their concomant economic and social upheavals, reat numbers in the ranks of unemployed adults and disadvantaged youth were helped through vocational education and training.

Research and Development Projects
Area Two: People with Educational Needs Beyond the High School

Vocational and Practical Arts Fields, Related Services and Persons Served by R&D

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- Agriculture
- Business and Office
- Distribution and Marketing
- Home Economics
- Health
- Industrial Arts
- Trades and Industries
- Vocational Guidance
- Technical

* Teachers
* Counselors
* Teacher Coordinators
* Supervisors
* Administrators

* Teacher Educators
* Curriculum Coordinators
* Human Resource Counselors
* Manpower Personnel
* Labor Market Analysis
* Kindred and Related Services Personnel

RESEARCH VISIBILITY reflects the continuing leadership to vocational and practical arts education of Dr. C. Thomas Olivo, Director, Division of Industrial Education, State Education Department, University of the State of New York.

The organization for the monthly series of this publication, the pattern for reporting and, importantly, the complete writing of this issue represent his work.

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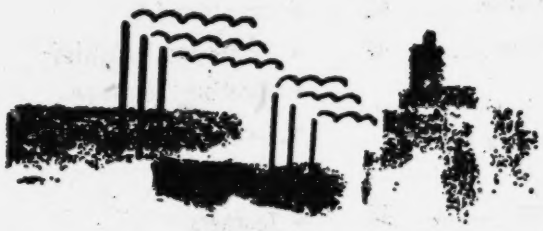
Under war emergency conditions, still more programs, which were to serve millions of people, were literally set in motion overnight . . . and were changed daily to reflect shifting demands and meet crucial labor market shortages. Today, in all areas of vocational education the capability to adjust to evolving and critical societal issues and human resource demands is again reflected.

The Return to Old Clichés

But, unfortunately, whenever Federal and/or State funds are curtailed, or the public fervor to meet an emergency slowly fades, apathy sets in. Needed programs conceived are dropped, and the public and the whole educational enterprise cycles around and reverts to old, unrealistic concepts of education for an "elite society." Until recently, what seemed like "education for education's" sake overrode the facts and needs as revealed by the Panel of Consultants on Vocational Education, and the "Manpower Report of the President to the Congress."

Critical Assessment

This is a point of time in history where more and more critical assesements are being made of what truly is happening to this Nation's priceless human resource. Questions are being asked about adequacy, accessibility, flexibility, administration, the nature and quality of instruction, the instructional process, and how the needs of more and more youth and adults are being provided for in vocational education and training programs. And, once employed, what possibilities will there be for workers to remain updated?



• KEYSTONES FOR MEASUREMENT

This issue concentrates on those projects funded by the Division of Comprehensive Vocational Education Research, Bureau of Research, and bears on any aspect of the program: planning, organization, development, demonstration, innovation, and evaluation, for youth and adults "... with educational needs beyond the high school."

Program Accessibility

Three major topics are treated. The first relates to "accessibility," the keystone for measuring the broad range of curriculum offerings in the context of an enlarged labor market area to better serve youth and adults.

A Second Major Topic . . . Curriculums

Analyses of groups of job titles in an occupational field (those requiring a common body of skills and related technology) reveal that clusters of jobs fall into employment classification levels. These may range from the single-skill operative, to the semi-skilled worker, to the craftsman and technician, to the semi-professional, and to other levels. Thus, Topic Two explores "Evolving Curriculums and Levels."

Forces Affecting Standards

Topic Three treats "Forces Influencing Quality Standards." Research and development projects are included which: • evaluate training programs with employment demands; • provide feedback from occupational analyses of labor market and vocational advisory committees; and • assess the adequacy of vocational guidance services with feeder schools, in placement and in follow up.

• PROJECT SELECTION

The projects selected for reporting center around:

• youth who have been graduated directly from high school and who want to enter a vocation;

• youth who may be early school leavers and have occupational experience of some type, but who want to move into other employment or to a higher level, and

• adults who may be displaced occupationally and need training for a new occupation or to move into other employment.

This issue focuses on those youth and adults whose needs may be served uniquely by programs of

• vocational education in public and private institutions, organizations and schools on a post-secondary level.

• ADDED REPORTS: ERIC SERVICES

R & D Projects for "High School Age Youth"

Because of space limitations, some completed studies were not previously treated and other projects "in process" which were omitted from the Bibliography are now included.

"Research in Education"

Some additional statements about ERIC: The national system furnishes information about research and related documents through "Research in Education." This publication of the Office of Education is issued twelve times a year. It is available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. The current domestic rate is $11.00 per year; foreign, $13.75.

Persons concerned with manpower training and ancillary services as an integral part of a total vocational and practical arts program may want to note that "Research in Education" includes (a) abstracts of materials acquired by all of the Clearinghouses; (b) abstracts and lists of n and completed projects initiated by the Bureau of R search; and (c) full information on how to obtain specific materials from the ERIC Document and Reproduction Service (EDRS).

Vocational Education Is People . . . With Educational Needs Beyond The High School

SYNTHESIS OF RESEARCH • RECOMMENDED APPLICATIONS

Topic One: ACCESSIBILITY TO AREA PROGRAMS • Extending full time curriculum offerings in vocational and technical education in area vocational schools for enlarged combinations of school districts • Developing effective post-secondary programs which meet more adequately the needs of youth and adults who are high school graduates or early school leavers and adults. (Studies 2:1 through 2.6. See also, studies 2:12 through 2:19, in process).

• 2:1 "Vocational Training for Library Technicians: A Survey of Experience to Date" by Martinson.

Is it possible to take the task areas of the professional librarian and train subprofessional personnel to perform some of them? By such action would medical library services be increased and at the same time would the flow of information to bio-medical researchers, health professionals, and the general public be accelerated?

This "survey of experience" covered programs (a) established for library technicians on a post-secondary training level, requiring less than a baccalaureate degree and with (b) formal classroom instruction (as contrasted with in-service or continuing on-the-job programs for library employees).

Problems and Inadequacies

Since the training of library technicians represents a new level, such problems were identified as: (a) the articulation of the technician with the professional supervisor; (b) the question of employer acceptance of subprofessionals to perform the simpler tasks, and (c) reorganization within an employment structure to accommodate library technicians.

This experience survey also points out other inadequacies like the need for valid analyses of occupations from which a common term and job specifications might be developed and a broad occupational study to define an "information technology program." Here the training of librarian technicians may represent one curriculum and other job titles in a cluster may require training at the high school level.

The five groups who were surveyed for comparable and relevant data included: administrators, teachers, students, graduates and employers. Case studies are included of the schools which were surveyed.

Some of the Survey Findings

The major survey findings relate to: • The numbers of institutions actually offering library courses at the sub-professional level; • the effectiveness of preparatory programs as measured by program growth, placement, etc.; • the limited extent of current employment in public and school libraries and in government installations; • the scarcity of instructional materials; and the dependence for teaching staff on professionals who may not have had experience in this evolving field.

The survey is a ground-breaking one. More in-depth labor market and training program information, occupational data, etc., need to be gathered and studied by researchers, curriculum specialists, administrators, instructional supervisors, and other manpower personnel before job specifications and needs are clearly defined; before curriculums are established based on analyses.

• 2:2 "A Pilot Study in Advanced Instrumentation for Technical Instructors" by Larson.

Industrial instrumentation affects the well-being and lives of all people. Without instrumentation such innovations as outer space communications and exploration, oceanographic developments, the computerization of industries, and the automation of plants would not be an accomplished fact.

As a comparatively new vocational industrial-technical education program, a need exists to update teachers who (a) are teaching in such an instructional program in secondary or post-secondary schools, (b) may be providing ancillary instructional services, and (c) who are encouraging occupationally qualified craftsmen to enter into teaching.

This institute followed good principles of organization in (a) involving knowledgeable persons from industry and vocational education to serve as advisors in identifying emerging technological developments; (b) defining on-the-job experiences and recommending qualified specialists within industry; and (c) developing up-to-the minute instructional materials simultaneously with the acquiring of new technical skills and the associated related technology.

Value of the Report

The report of this industry/university two-week institute should be valuable to teacher trainers who are developing similar in-plant/college coordinated programs, vocational curriculum specialists, administrators and supervisors who are planning to include an instrumentation curriculum or extension courses, and craft advisory committees.

Technical laboratory teachers in instrumentation, those who teach related technical subjects, and others in associated disciplines will find the teacher-made materials helpful to the further development of course outlines, teaching plans, information and job sheets, and testing materials.

Note: Concerned persons may want to refer, too, to the Curriculum Guide titled: "Instrumentation Technology." This Guide was prepared under direction of the Division of Vocational and Technical Education, and bears the identifying number of OE 80033. It is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

• 2:3 "Eight Week Summer Institute Training Program To Teach Instructors of Instrumentation Technology" by Ziol.

Updating institutes for instructors in industrial instrumentation technology have been carried on ever since the late fifties in certain of the North Atlantic States. The Rutgers University institute project previously reported, and the forerunner of such institutes in the Nation, the State University of New York, Division of Vocational Technical Education at Oswego, were keyed to teachers in the secondary schools where quality vocational industrial-technical education programs were offered.

By contrast, two other 1966 summer instrumentation institutes, (approved under PL88-210) were primarily invitational ones to teachers of instrumentation or automatic control in existing or potential programs of technical institutes or junior colleges.

Wise Use of Industry Know-How

The Rutgers/Oswego Institutes followed a completely within-industry approach for the development of skills, related instrumentation technology, and the mathematics, physics, measurement and circuitry principles and practices that are supportive related subjects in a curriculum.

The California institute took the U.S. Office of Education's "Instrumentation Technology" Curriculum Guide and attempted to prepare teachers to teach physics for instrumentation, related mathematics, mechanical measuring principles, electronic circuitry, and instrumentation shop practice as the first year of a two-year post-secondary program. Thus, the emphasis was on the "development of knowledges and skills essential for teaching specialized courses in Instrumentation Technology."

While the Rutgers and former Oswego institutes were conducted in industrial plants with a fine cooperative working arrangement among representative industries, the California project used the instructional facilities of a city college and added loaned or rented equipment.

The report of the Institute contains daily critiques and evaluations of: the number of specialists from the college and industry who participated in a closely coordinated program, the instructional facilities, and the field trips and supportive services. Since the institute was keyed to the "Instrumentation Technology" Curriculum Guide, no curriculum materials are included. The second similar institute report for State University of New York, Agriculture and Technical College at Morrisville, was not available for reporting at this time.

Programs to Match the Capabilities of People

The point that needs to be emphasized at this time is that teacher trainers, state supervisors and others who may plan similar institutes in future years should carefully compare the plans of instrumentation at Rutgers, Oswego, California, and elsewhere. Importantly, recognition should be made that quality Instrumentation Technology Curriculums may be provided at either or both the high school level as part of a vocational industrial-technical education program or within post-secondary institutions.

Missing Ingredient: Vertical Curriculum Planning

Taking an editorial prerogative, it is a sad indictment of industrial teacher trainers and vocational curriculum specialists when the preparation of teachers and the development of curriculum materials are not planned so there is vertical curriculum coordination between secondary and post-secondary levels. Until such time as there is an awakening of the tremendous capabilities of secondary school age youth, the needs long expressed by the Instrumentation Society of Amerca for education and trained instrumentation technicians, who are graduates of the secondary schools, as well as others who are developed at a higher level which builds upon such training, the present aggravated shortage will become even more severe. And youth, as the most priceless human resource, will continue to be downgraded.

• 2:4 "Program for Technical Communications Training for Technical Education Teachers (Summary Report)" by Weisman.

Effective communication, trite as it may sound, is an essential ingredient in the teaching/learning process. Thus, the ability of the teacher to communicate depends on the wise use of the written and spoken word as well as any other aid, device or technique that may reach another person.

The first two weeks of this communications institute were specially planned for technical education teachers. Here they listened to and worked with able educational and industrial leaders in particular areas of technical and industrial communications. This subjected the candidates to principles, skills and effective practices in technical communications, relating this knowledge to improving teacher-made curriculum materials, personal writing skills, and more effective oral communication.

Wholesome Approach to Improved Communications

A series of instructional units are included in the summary report. These may serve as a base for outlining future course content. Those who plan teacher education programs or supervise teachers and evaluate their instructional effectiveness will find a wholesome approach in both content and methodology. This may be the key to the problem of continuously improving the communications skills of educators. It may provide foundational

information for pretesting communication abilities in new teachers and may help to define in a more practical way the nature and extent of communications courses and experiences required in the professional preparation of teachers.

Some of the major units related to: basic elements of technical writing, technical, editorial practices, information storage and retrieval, publications photography, principles and practices of graphic arts, industrial and technical forms of communication, and advanced elements of technical writing. Resource materials used as out-of-class references are identified with each unit.

The third week of the institute was coupled with another annual institute on Technical and Industrial Communications. Here, other industrial personnel presented a different panoramic overview of the entire area of communications and attempted to extend still further the communication capabilities of each conferee.

• 2:5 "The Documentation of Steps to Establish a Technical College and the Evaluation of 'PERT' as a Planning Tool for Educators, (Phase I)" by McKee.

The project title indicates that the researchers considered the essential steps of planning, constructing and equipping the physical plant and instructional facilities of a technical college. Other documentation relates to curriculum development, staffing, recruiting and student selection, etc.

The term "technical college" in this study refers to a post-high school institution which concentrates on occupational, technical and semi-professional education, and provides training for those who will directly enter the work force following completion of a two-year program leading to an associate in applied science degree.

Secondly, the study attempted to evaluate "PERT," a management tool and system as a Program Evaluation and Review Technique. Another term, "critical path," is used to denote the starting and target or completion dates: the period between conception and the actual operation of a program.

Major Classifications in "PERT"

The body of the report reveals the major items, activities or tasks to be accomplished in establishing a college. In this case, nine important classifications are used with the PERT system. These include: physical plant, instructional equipment and facilities, students, personnel, budget, library, curriculum, contractual services, policies and operating procedures.

To "old timers" familiar with established school planning procedures in vocational education, the nine major activities follow analysis techniques of breaking down complex overall administrative responsibilities into major components, then into other prime activities and subactivities.

The devising of the PERT charts does add the visual dimensions of preplanning, permits easy and constant checking at critical points in a tight schedule, and provides opportunities to assess program development progress.

While a statement in the report indicates that a college was built and established in 84 work days after the first staff member reported, the total manhours required was 15,000 or the equivalent of 7½ man years of work! The report recommended the need for an even greater number of manhours in the planning stage. Persons reviewing the report should not lose sight of the fact that, in addition to preplanning, time had been spent for such preliminary work as the making of occupational studies to determine interest, need and support; and in devising appropriate legislation, and seeking assurances of financial support.

A Helpful Guide to School Planners

The tasks identified in the narrative body matter, the master chart, and the flow charts with major activities and schedules, are commended to school planners, State education department administrators and supervisors, teacher trainers and others who are planning vocational education programs.

While devised for a technical college, the plans and techniques are also applicable at the secondary school level. This is a refreshingly different approach to school planning with consideration given to latest industrial management techniques for possible application in vocational education.

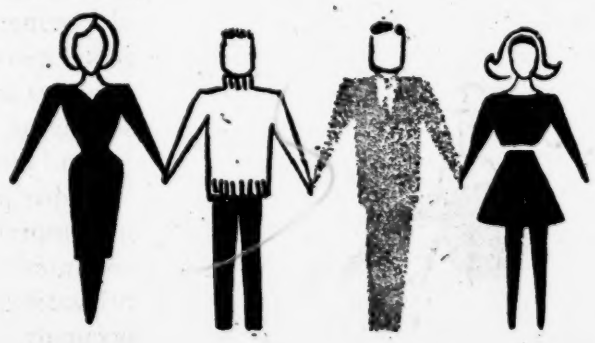
The techniques of analyzing, charting out and developing check lists and check points for significant activities and according to a time schedule, should simplify and accelerate the establishment of new area vocational schools. With some adaptations and ingenuity it may be possible to use the plan and system to assess and modify existing programs of vocational education.

• 2:6 " Summer Institute to Train Data Processing Teachers for the New Oklahoma Statewide Computer Science System, (Final Report on Phase I)" by Tuttle.

A total statewide program of teacher education in a newly evolving field was preceded by and based upon a design of a data processing curriculum. Such a curriculum was developed from an analysis of industrial data and a feasibility study which, among other issues, sought to determine the practicability of utilizing a time-sharing schedule and a remote data communication transmission terminal.

Part of the study dealing with the summer institute concluded with statements that:

• Teachers with good backgrounds in mathematics, science and business may be trained in two ten-week summer sessions to become qualified teachers in telecommunications;



• Aptitude interest and capabilities for teaching data processing can be measured;

• Teacher training requirements can be defined for teaching post-high school technical education programs leading to the development of computer programers or systems analyst technicians; and

• Teachers of data processing can develop in institutes a wholesome philosophy of vocational education and the significant place of the technician in an automated industrial society.

Other states may want to study carefully the significant findings and experiences for organizing a statewide program using a centralized data processing unit as a complementary, functional part of every area school's program.

The researchers developed course outlines and bibliographies of resource items which relate to the assembly language, basic data processing mathematics, data processing accounting, and statistics. Instruction in specialized program languages of FORTRAN AND COBOL emphasized a problem approach through actual laboratory work. The electronic data processing curriculum developed as a result of this study is included in the Appendix.

Time-Sharing Computers and Remote Terminal Devices

Equally valuable is the scholarly and yet down-to-earth research study containing National data and testimony on the burgeoning need to train great numbers for computer programing, giving consideration to time-sharing computers and computer systems and remote terminal devices which may be applied in an educational setting.

While data for this research project was obtained for one state, the methodology and instruments used, and the comparable information received, the experience should be utilized and built upon by other states. The data was analyzed and classified according to major occupational clusters like programers and systems analysts for business applications or scientific applications. Cost analyses and essential considerations for establishing a statewide, and possibly regionalized, program are projected.

Feasibility and Effectiveness

The feasibility study contains tremendous significant information that demands careful analysis by contiguous states as well as others who are either operating limited programs or planning new ones. This step is recommended for state and regional levels with committee representation from local areas. For, it is at the state level where the first decision must be reached to correlate facilities, programs, and services among all school districts into a state or regional vertically coordinated program for secondary and post-secondary schools.

Curriculum coordinators, general and vocational administrators and supervisors, researchers, subject matter specialists, potential teachers, counseling and manpower personnel, teacher trainers, et al, will find both the occupational/labor market feasibility study and the teacher institute report important to the extension of data processing programs which may reach across more than one school district.

Topic Two: EVOLVING CURRICULUMS AND LEVELS • Meeting manpower training demands in a constantly changing technological society • Identifying levels of vocational education programs within post-secondary institutions to provide instruction beyond the high school level • Curriculum materials development for post-high school • Administration of technical education. (Study 2:7. See also, studies 2:20 through 2:26, in process).

• 2:7 "THE FEASIBILITY OF A SYSTEMATIC STUDY OF MANPOWER REQUIREMENTS AND EDUCATION AND TRAINING PROGRAMS OF SELECTED HEALTH OCCUPATIONS" BY POLLIARD.

The newly emerging concept of health means optimum physical, mental and social efficiency and well being, in addition to freedom from disease and untimely death. These demanding health goals require greater utilization of health programs and services and more health manpower. Many of these persons will need to develop higher levels of skills and related technical knowledge.

Studies Essential to Wise Manpower Utilization

As skilled personnel and high quality service requirements in the health occupations are projected according to population, evidence points to the need for: • conducting occupational studies of health and related occupations; • clustering job specifications into levels according to degrees of complexity, maturity of judgment, and extent and depth of training required; • making analyses to define scope and sequence of knowledge and skills; • organizing and managing education and training programs, facilities, staff, etc.; and • utilizing in- and outside-of-school personnel and facilities.

Major projects or experiences were studied which may apply to the conduct of a comprehensive systemwide health occupations manpower study in an urban community. This feasibility report indicates that such a study of requirements, utilization of resources, education and training programs for selected health occupations, should be undertaken.

Components of a Long-Term Study

A general plan was advanced for a long-term project aimed to alleviate health manpower shortages by preparing adequate numbers of well-trained and educated personnel. The proposed study is to be conducted in different phases with tasks identified and scheduled using good occupational analyses, organizational and modern management techniques. These are well documented in the report.

The study would relate to:

- the coordination of need with the wise use of community resources;
- the assessment of manpower to conserve human energy and resources;
- translating emerging occupations into curriculum patterns;
- matching human capabilities with job specifications for a more intelligent dispersal of manpower;
- the systematic planning and articulation of functional assignments with education and training programs;
- developing pilot programs and; finally,
- suggesting a plan of action for consideration by other urban communities which would build upon whatever outcomes might apply.

Chief school administrators on state levels and others serving enlarged school population areas; manpower, labor market and economic area planners; supervisors responsible for health occupations; researchers and teacher trainers, will find the report a good resource which establishes the feasibility of an in-depth systemwide study and identifies the nature of and structure for such an undertaking. The study report applies equally as well to high school age youth.

Note: This research project was listed (item 65) as being "in process" in the last issue. Experience indicates that manpower findings in health occupations require full and part-time education and training programs provided at various educational institutes.

Topic Three: FORCES INFLUENCING QUALITY STANDARDS • Direct relationships between training and employment • Occupational information feedback • Program flexibility built upon occupational analyses • Vocational guidance and feeder schools; placement and follow up of work performance. (Studies 2:8 through 2:10. See also, studies 2:27 through 2:36, in process).

• 2:8 "The Influence of Industrial Arts Experiences on Grades Earned in Post-High School Trade and Technical Curriculums" by Moss.

Teachers of industrial arts subjects and trade and technical courses in vocational industrial-technical education curriculums have for years supported the premise that one of the many unique contributions of industrial arts education at the senior high school level was its pre-vocational value; that the success factor of students continuing in a related trade or technical curriculum was greater than for those who entered without such experience. And on this basis, and some others, many programs of industrial arts education were justified.

Continuous Self-Assessment

Over this same period of time, industrial arts educators have continuously carried on a self-assessment and dialogue about objectives, functions, organization, accomplishments, etc. These were always attempts to keep the programs modern and to extend the nature and scope of services, particularly to youth. Lacking research findings and other objective evidence, like any other field where people are to be measured, too many determinations had to be made at a speculative level.

So, it was only natural for a beginning measurement to be made of the positive transfer of manipulative, attitudinal and intellectual skills ("psychomotor," "affective" and "cognitive" domains) developed through experiences in industrial arts for application to trade and technical training.

The four major questions that require answers all relate to: "Are there differences in a student's post-high school scholastic achievement which may be attributable to high school— •"Course work which does not provide any experiences in industrial arts; provides from one to five semesters of such work; and six or more semesters?"; •"Grades in industrial arts courses as compared with grades where no industrial arts are taken?"; • "Course work which has direct or indirect relationships to post-secondary content in trade and technical curriculums and where no industrial arts courses are taken?"; and •"Course work where there is an above or below average emphasis on a 'prevocational' or claimed 'vocational' objective for industrial arts, again, as compared with those students who took no such courses?"

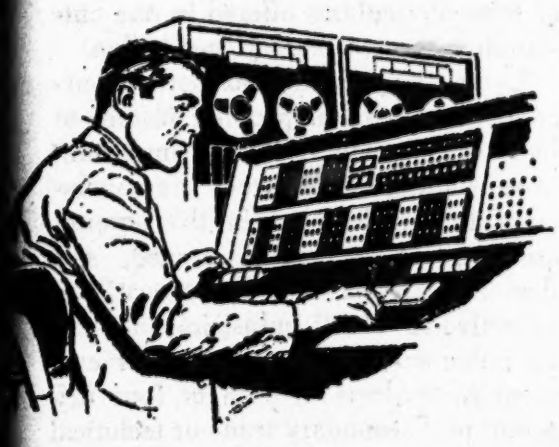
To summarize, the study assessed the effect of differences (a) in the amount of industrial arts course work, (b) grades earned, (c) the content of high school industrial arts as compared with post-high school vocational curriculums, and (d) the prime purpose for which industrial arts courses were taken.

Students pursuing one of four different trade or technical curriculums, (automotive, drafting, electrical and machine shop), were selected for the sample. The research design included a statistical measurement of controlled, independent, dependent and descriptive variables.

Findings, Limitations and Caution

The significant results should be of value and concern to industrial arts and trade and technical education curriculum planners, teacher trainers, researchers, student personnel services coordinators, officers and members of professional organizations, and administrators. However, before the outcomes are widely disseminated, a word of caution is in order here the same as with most educational research. What the recorded results disclose is the actual prevocational value of certain industrial arts courses on a limited sample of students in a selected cluster of four curriculums offered in one outstanding post-secondary institution.

Under these conditions there is urgent need for other probing studies to build on this one. For, it is important to substantiate or disprove the conclusions that differences in the amount and content of grades earned, and degree of emphasis on a prevocational objective as one of industrial arts, had no influence on the scholastic achievement of students in each of four different post-secondary trade or technical curriculums.



• 2:9 "EMPLOYMENT OPPORTUNITIES AND USABLE AGRICULTURAL SKILLS IN NON-FARM AGRICULTURAL OCCUPATIONS" BY DILLON.

Employers in thirty-eight counties in the Appalachia region of two contiguous states were surveyed for employment opportunities and patterns, job specifications, worker competencies, preemployment and upgrading training needs, and other relevant manpower data.

From this mass of information, fifteen occupational clusters of job titles requiring similar preparation were formed. These may be translated into course content areas such as plant and soil sciences, physical science technology, animal science and food science.

Determining Occupational Competencies

The employers in the sample, who were interviewed by a trained team, employ workers who use agricultural knowledge and skills. From their responses and those of other workers, it was possible to establish general competency areas for entry and advanced agriculturally oriented vocational jobs (where high school preparation may be adequate) and others of a technician nature that may require post-secondary training.

Interestingly, while technician jobs are emerging and demands will increase, the study reveals that two and a half times more "agricultural vocational" workers will be needed in the next five years.

The final report describes the design and techniques used. It brings together the data for systematic analysis into the agricultural knowledges and skills needed in non-farm agricultural occupations. This comes close to the end point of broadly defining curriculum patterns.

These recorded experiences, manpower facts, and the analyses should be examined by adminstrators who are planning to extend area vocational education programs and services: employment, student and employee counselors and personnel service coordinators; teachers, and others responsible for curriculum development or research activities.

• 2:10 "IDENTIFYING SUCCESSFUL TECHNICAL STUDENTS IN JUNIOR COLLEGES" BY TURNER.

Can the waste of human and material resources resulting from high attrition rates among students pursuing non-technical associate degree programs in junior colleges be reduced? Are there particular characteristics that may accurately differentiate between students and potential success in completing selected technical and non-technical curricula? Can any characteristics found to be essential for predicting success be measured reliably?

Toward Saving Potential Failures

Well, by analyzing personal data, test scores and earlier performance, this study team hypothesized that many possible failures from among non-technical program students could succeed if they possessed certain characteristics and pursued a technical curriculum.

This project centered around specified curricula in a junior college in a State School system. The report makes no generalizations about the findings and conclusions as being representative of or applying to any other junior colleges.

The sample consisted of students enrolled full time in one of four programs, each having an anticipated 35 students from the population who would graduate. The four programs included: technical education (a combination of civil, design/drafting, electronics and laboratory technology curricula), business administration, engineering and liberal arts. The socio-economic index of parents; various test scores, grade point average high school rank, and graduation status, were the dependent variables.

The report may provide some statistical yardsticks and techniques to guide junior college adminstrators, other professional teaching staff, and guidance personnel in conducting similar studies to (a) develop predictors of students' potential for successfully completing specific curriculums, (b) appraise internally the academic philosophy of the institution, and (c) assist students to make realistic career decisions.

VOCATIONAL EDUCATION IS PEOPLE . . . HIGH SCHOOL AGE YOUTH

Additions to completed research, demonstration and institute projects that have been reported in "Research Visibility" for a major "Area" will be received continuously after publication date for a particular issue.

Important research and development projects will be selected from these additions for coverage in subsequent issues of "Research Visibility."

Reported at this time are those in Area One ". . . High School Age Youth . . ." relating to Quality Standards and Curriculums to Meet Needs.

Topic Three: Quality Standards

• 1:90 "AN INVESTIGATION AND DEVELOPMENT OF THE CLUSTER CONCEPT AS A PROGRAM IN VOCATIONAL EDUCATION AT THE SECONDARY SCHOOL LEVEL" BY MALEY.

(Phase I, "Final Report"; Course Outline: Construction, Electro-Mechanical Installation and Repair, and Metal Forming and Fabrication Clusters)

The "cluster concept," considered in this project as an innovation in vocational education, is designed to develop student capability to enter into employment in a cluster of related occupations. This means the development at the high school level of skills and understandings to "enter a family of occupations" as contrasted with a conventional program "which prepares a person for a particular job. . ."

Basic Questions for Curriculum Activities

This study did not attempt to establish a local, regional or national program of vocational education. Rather, it sought to answer these questions:

- Is the cluster concept of organizing instructional programs in vocational education feasible?
- How acceptable would "cluster training" be to those who employ and work with the product?
- Are occupational clusters and specific occupations within the cluster identifiable and are they adaptable to a cluster concept program?
- Can course outlines be developed for a program?

After analyzing earlier studies of classification systems and analyses, occupational clusters were formed ultimately for (a) construction, (b) electro-mechanical installation and repair, and (c) metal forming and fabrication occupations.

A combination of modified statistical, behavioral science, and content analysis approaches were used to identify the "human requirements"; i.e., the skills, mathematics, measurement, science, communication and related information. The human requirements became the basis for course outlines.

For each occupational cluster, • the tasks performed by a worker going into an entry job are given; • these are analyzed for the mental and manipulative skills required; • and are followed by an example of an instructional sequence of tasks; and • the common learnings and skills needed for the occupational cluster; • finally, course outlines are prepared, giving sources of instructional materials.

Establishing Need and Feasibility

Criteria were determined for identifying job titles in the occupational cluster and the characteristics of occupations. Further, based on national reports and many papers and writings of individuals, • the need for a cluster concept; • the mobility and adaptability of workers to changing technology and employment patterns; and • the flexibility within programs to permit wide student choices, were established.

Up to now what has been written looks back over the why, how, where, who, what, and the results of this project. It is time to look quickly ahead to experienced and highly qualified operational level vocational educators at state and local levels to objectively weigh out all of the materials.

Missing Ingredients . . .

Experienced state and national leaders who have contributed significantly to major curriculum philosophy and developments in vocational industrial/technical education seem to be missing. Certainly those who serve as approved vocational industrial teacher trainers, vocational curriculum development personnel, outstanding vocational industrial/technical education teachers, qualified area directors of vocational education, and others need to carry on independent evaluations of this study.

To be forthright, editorially, these experienced, knowledgeable persons and groups need to resolve a philosophical issue. Is the broad generalized occupational cluster program approach really sound vocational education? In this instance would it constitute a bonafide quality vocational industrial education program?

• 1:12 "APPROACHES TO USE IN ASSESSING NEEDS FOR, CONTENT OF, AND CERTAIN FACTORS TO BE CONSIDERED IN PREPARING FOR GAINFUL EMPLOYMENT" BY COZINE.

Many studies similar to this one are being carried on simultaneously throughout this country. All are seeking answers to the challenge of the Panel of Consultants and the Vocational Education Act of 1963.

The guidelines for this research project were the early and continuing principles for establishing and administering vocational education programs. Interpreted in the context of home economics programs that prepare for gainful employment, here are some of the guidelines that were used:

- Programs should be offered only if they make significant contributions to the welfare of the individual;
- There is evidence of local interest, vigor and support;
- At the completion of a training program there is a possibility of employment;
- Sufficient instructional time will be made available to develop marketable skills;
- Vocational counseling will be provided by persons who from experience know labor market needs;
- Curriculum change is based on valid occupational analyses from which content is derived in preparing for a cluster of jobs, each requiring comparable skills and knowledge; and
- The helpful support and advice of a Vocational Advisory Committee is a necessity.

Outside Agencies Assist

Related services and agencies like the State Employment Service, State Department Personnel, County Health Officers, Social Service Supervisors, Child-Welfare and Family Relations Units, businesses and service centers assisted. Many of the conclusions resulted from information furnished by these groups.

Unfortunately, the study is circumscribed by certain limitations relating to size of geographic area, number of respondents, and involvement of experienced vocational educators from other fields. Such persons, over the years, may have been providing in-depth specialized instruction for the same or closely related clusters of job titles. Further, curriculum change should be based on valid occupational analyses covering an enlarged area, State or National labor market.

The report should be considered not as a final answer to fit precisely into another community's needs. Rather, it contains important materials relating to the techniques developed, the data gathering forms, and the interpretations of the findings. To this end, the report should be valuable to teacher educators, home economics teachers, and supervisors, and to related services concerned with curriculum revisions to include the development of skills and related technical information as preparation for wage-earning, child care, clothing and home sewing service occupations.

• 1:91 "FLEXIBILITY FOR VOCATIONAL EDUCATION THROUGH COMPUTER SCHEDULING" BY ALLEN.

With continuing improvements in computer-based scheduling, is it feasible to harness this technology to improve vocational curriculums by moving away from uniform time and space schedules, conventional student groupings and current staffing patterns? If a "break out" could be effected, would it provide a better balanced program for students majoring in vocational education if they were able to get more prevocational experiences? Can vocationally-oriented experiences be introduced for students who are enrolled in non-vocational curriculums?

Essentially, these were the principal goals for exploring the feasibility for curriculum improvement using the Stanford School Scheduling System. If practical, it was envisioned that schools might refine and redeploy the time and talents, and the human and material resources of students and teachers to provide an enriched and more functional program of vocational education.

Two sets of schools were studied: vocational-technical and the so-called comprehensive school. They were selected to represent different geographic areas, types and sizes of schools, school organizational and administrative patterns, etc.

Minimal Programs of Comprehensive Schools

A few significant findings are reported. Most "comprehensive schools," said the report, have only ". . . minimal vocational education programs which are frequently on the periphery of the total curriculum . . ." and poor articulation with the rest of the instructional program. Also, since vocational students spend considerable time in general education, it is vital that there be a penetrating analysis to effect greater articulation.

Equally important is the need to assess the time schedules for vocational curriculums and the all-too-often limited interface of vocational educators and vocational programs with the work world, especially through the establishment and use of advisory committees and the public.

Substituting Performance for Time Criteria

The investigators suggested the substitution of a performance measurement for the established time criteria as a possible shift of focus back to the student. What is reported out covers the first year of what was conceived in the objectives of the demonstration as a three year project. Starting as a developmental model, continuous refinements may ultimately result in its conversion to a production system.

The demonstration, quite naturally, established a series of hypotheses to be tested as these relate to:

- serving greater numbers of youth in vocational education;
- greater flexibility in scheduling with variations in group size;
- differentiation of course content in parallel fields;
- more dependence on the student for independent and individual study;
- increased recognition of differences in abilities and interests;
- changed teacher and teaching specifications and assignments; and
- wiser utilization of administrative capabilities and time.

School administrators on state and local levels, teacher trainers, student personnel services coordinators, researchers, advisory committees, and others concerned with program planning and organization, will want to study the report. Significant changes in curriculum designs, staff assignments, plant utilization, student scheduling, and other implications for program change, may result from computerized scheduling.

At this point, what is reported should be recognized as statements of progress, rather than final recommendations based on the complete demonstration.

• 1:13 "AN EXPERIMENTAL VOCATIONAL EDUCATION INSTITUTE FOR THE PREPARATION OF TEACHER COORDINATORS OF NEWLY EMERGING HIGH SCHOOL VOCATIONAL PROGRAMS" BY SAMSON.

Vocational cooperative education programs have over the years provided many high school age youths with in-school instruction coordinated with on-the-job development of skills as preparation for employment. Otherwise, such opportunities would have been denied them.

Value Proved By Service

Vocational cooperative education programs have been offered in each vocational education field in secondary schools and post-secondary institutions. Where the cooperative phase of such instructional programs has been preceded by a quality full-time, in-school preparatory vocational education instructional program, this capstone provides an ideal final culminating school-to-work experience.

The setting for this study and institute for preparing teacher coordinators is the State of Wisconsin. Here, new programs of vocational education are emerging, in addition to those that have been offered in agriculture and home economics. Selected teachers who were to serve as teacher-coordinators had to be prepared through a sequence of experiences to analyze needs within their geographic areas; become knowledgeable of organizational and management patterns to use in the program; know legal employment practices, etc.; and have available resource materials necessary in the instructional process.

The teacher-coordinators determined the characteristics of their areas according to four population groupings. These ranged from the large Metropolitan areas of over 80,000 to minor Metropolitan areas and from major to minor urban-rural areas.

Primarily, there were four parts to the institute program. The on-campus phase was intended to develop basic knowledge about the organization, management, and operation of programs at the high school level. This was followed by field and project work within the schools and with employers and other groups to be served. The teacher coordinators then returned to campus for further assessment of experiences, refinements to program plans, and additional instruction on program operation.

On-The-Job- Evaluation

Throughout the year, four observer groups composed of teachers, administrators, counselors and local vocational coordinators carried on evaluations. This follow-up covered the teacher-coordinator, the program, and student achievement.

It may be interesting to review the major topics covered on-campus. Seven were emphasized starting with foundations for vocational programs. The other topics included: program development, student selection and placement, planning occupational experiences, program operation, instructional coordination, and program evaluation and improvement. As an end result of the institute and with subsequent planning, sufficient information became available upon which to develop a vocational teacher-coordinator training program.

Vocational teacher educators may find value in the organization and planning procedures for the institute, the statistical approach and techniques used to determine the characteristics of each population area, the follow-up evaluations, and study of problems and issues. These are recorded as "critical incidents" in initiating high school vocational education programs. Area vocational education directors may want to analyze the report for program development implications.

Building Upon Accomplishments

An editorial reminder may be in order. Persons contemplating the developing of teacher education programs or the development of essential instructional materials should make an intense search of materials necessary for such purposes. This is not a new program of teacher preparation as many states have had certification requirements for vocational teacher-coordinators. These requirements and the available instructional material should be reviewed to build upon, rather than to duplicate the professional planning and efforts of others.

• 1:15 "DEVELOPMENT OF MARKETABLE TYPING SKILL: SENSORY PROCESS UNDERLYING ACQUISITION" BY WEST.

Does a learner who is denied the use of certain sensory processes in the development and acquiring of a new skill learn the skill faster, slower, or at the same rate? In this instance, the particular skill selected for investigation was one of ordinary copying at the typewriter.

Unfortunately, the results of this study are based on the experiences with limited numbers and for a single skill. The 266 typists in the sample had a skill range of from 9 to 108 words per minute. Predominantly, there were 224 high school and college students from four schools. Another 42 employed typists were included.

There were three test conditions under which each participant typed:

- The first condition provided a basis for classification according to skill level. Each typist was given conventional instructions to follow copy word by word.
- Under the second condition, each typist was instructed to space once and retype immediately any word thought to have been mistyped, before proceeding with the next word.
- Finally, the typists followed the second set of conditions but, in addition, were deprived of visual reference to the typewriter or typed copy.

From the results it was established that visual control is important early in the development of new typing skills. However, deprivation of vision had no significant effects on performance speed. This revealing fact, together with the feedback data, raise important questions about the insistence on conventional teaching according to "touch" typewriting from the start of learning. The free and early use of vision is suggested.

The references cited by the investigator did not identify recent studies on the subject by specialists in the field or extensive related new studies by psychologists and others. At this point, the study may be of value to researchers who may want to evaluate the findings and methodology as foundational to greater in-depth studies. The results of such effort may then provide sufficient and extensive information to materially effect changes in curriculum and methodology.

• 1:92 "Appraisal of Curriculum Materials Developed for Use by Secondary Home Economics Teachers" by Horn, Fern.

A two-year statewide curriculum project by teachers of home economics in secondary schools resulted in the development of resource teaching units. These were prepared for different grade levels (7 to 12) to develop competencies for effective personal and family living in the two areas of clothing and child development.

In this part of the study, the coverage of the unit objectives was analyzed and the complexity of content was compared by testing at each grade level. The data are summarized in tables which show how the use of each resource unit was measured in relation to (a) types of programs, (b) service as a supervising teacher, (c) curriculum enrollment, and (d) the quality of the objections. Item analyses findings are also summarized.

Value of Teacher-Made Resource Units

It was learned that teacher-made resource units

- provide challenging student experiences;
- affect the learning process significantly; and
- change the teaching patterns of many, especially those who are supervising teachers. A need was cited for analyzing teacher competencies to develop the capacity for critical thinking. The tests were reported as valid measurements of difficulty and had necessary discriminating power.

Classroom teachers of home economics, supervisors, curriculum specialists, administrators and teacher trainers should be able to adapt the instruments and procedures to fit any similar curriculum planning, teacher training or evaluation endeavor.

Those who counsel and guide youth may be interested in comparing accomplishments in the resource units with IQ or any other score like the Minnesota Scholastic Aptitude Test. This should be especially useful in determining how the needs of low ability students may best be met.

• 1:93 "Developing a Scale to Measure Interests in Agricultural Occupations" by Hamilton and Hill.

Changes in curriculum direction, in vocational-agricultural education, for essential preparation to enter work on-the-farm now include off-farm occupations which require agricultural skills and call for the development of more valid vocational guidance instruments and procedures. Thus, to assist young people in identifying their interest in the five major occupational fields of agricultural production and management, ornamental horticulture, agricultural business, agricultural mechanization, and conservation, this research team concerned itself with an Agricultural Occupations Interest Scale.

Developing Interest Items

Interest items of typical job activities and concepts were developed. These were reviewed, revised, and then tested. In turn, a list and a scoring key were developed for those items that would discriminate most successfully between each field.

Extensive field trials were made with successful men and women. Their responses were compared with those of high school students. Background information was given and uniform reporting techniques were developed in a special training program for the interviewers.

The study results established the fact that persons in agricultural production and management, ornamental horticulture, and agricultural mechanization had interest patterns in each separate field that could be differentiated using the Agricultural Occupations Interest Scale with reasonable success, conservation with moderate success, and agricultural business to a lesser degree. Although women's scores were ranked, more work needs to be done.

The principal investigators recognized the trial nature of the 100 items on the Scale, the need for extensive long-term application, and continuous follow up to prove its guidance value.

This down-to-earth report is recommended to administrators, coordinators and planners of area programs of vocational education on secondary and post-secondary school levels, vocational curriculum coordinators, vocational guidance and employment service personnel, vocational subjects supervisors and, importantly, teachers of agricultural subjects.

To supplement the body of the research report, its findings and conclusions, the Appendices contain the research instruments, statistical tables, and Interviewers Manual.

• 1:94 "Review and Synthesis of Research in (A) Agricultural, (B) Business and Office Occupations (C) Distributive, (D) Home Economics, (E) Industrial Arts, (F) Technical, and (G) Trade and Industrial Education" by Taylor, and Others.

Research studies and other valuable documents in seven "substantive" fields of vocational and practical arts education were reviewed and synthesized by specialists into a series of papers, each covering a specific field. The papers follow a somewhat uniform format for style and organization, starting with the important area of Philosophy and Objectives (1).

R & D Related to Fifteen Major Areas

Then, other significant studies are reported as they apply to (2) Manpower Needs and Employment Opportunities, (3) Curriculum Development, (4) Educational Programs, (5) Instructional Materials and Devices, (6) Learning Processes and Teaching Methods, (7) Student Personnel Services, (8) Facilities and Equipment, (9) Teacher Education, (10) Administration and Supervision, (11) Evaluation, (12) Research, and (13) Ancillary and Other Contributing Activities. Conclusions and recommendations of the specialists (14) and a composite Bibliography (15) of resource materials are included.

Stimulating and Facilitating Research

At local, state and national levels, researchers, teacher educators, supervisors, administrators of vocational education programs, curriculum coordinators, manpower and human resource personnel, and their counterparts in the occupational world, may consider these Review and Synthesis reports as benchmarks for • assessing research, • planning new research activities realistically, • disseminating new knowledge and skills, and • stimulating and facilitating the application of proven techniques, information, processes, etc.

Coupling the increased potential, the accelerating rate for producing and transmitting information through the Clearinghouse for Vocational and Technical Education, the ERIC system, "Research Visibility," and other channels, it is feasible to keep updated.

But, equally important, is the added capability to reach back over the years to the pioneering efforts of the early and visionary leaders of vocational education. The principles and practices which they established as firm foundations need to be assessed again and again for their value toward insuring the integrity and excellence of vocational and practical arts education in serving man's needs.

"PLAIN TALK"

A few concerns that came to light as research, development and institute projects were analyzed for "Research Visibility" should be shared. For example, in any research effort affecting people and the whole educational system, or a program in a vocational or practical arts field, there comes the moment when all of the data, information, and experiences that can be brought to bear on a particular issue reach a focal point for decision making. Here is the crucial human equation . . . a single individual or group who must ultimately make subjective judgments.

Critical Human Judgments

This is especially critical in educational research which is rarely "pure" research. Totally objective evidence that may be pyramided to always get the same conclusive answers is usually not possible to obtain. Thus, in most educational research the principal investigator subconsciously or deliberately builds himself into the research. And, the conclusions which result are conceived in the context of his experiences. Special precautions, therefore, need to be taken to approve persons who are qualified to make profound judgments.

Here an abstraction from the philosopher Kahlil Gibran may be in order. In essence, he said: ". . . No man can reveal to you ought but that which lies half asleep in the dawning of your knowledge. . ."

It is Obvious That . . .

√ . . . Too many persons plan research and other studies and demonstrations with limited and myoptic vision. The practice of a single researcher or group relegating an instructional program to the instructional or institutional level at which he serves, without carrying out a vertical curriculum correlation study, is an insidious one!

Such practices normally downgrade the capabilities of youth in high schools and deny them, as well as other adults, instruction at advanced levels. Higher levels may be reached when secondary and post-secondary programs are developed simultaneously to complement, rather than to duplicate one another.

√ . . . Research dealing with curriculum planning, organization and development is too narrowly defined, representing small, fragmented parts. Instead, curriculum efforts should fit into an enlarged concept where they are central to every facet of total program planning and organization, such as the design of physical plant and facilities, staffing, and instructional services.

√ . . . Potential researchers need to follow the practices of their own teachings. Too many violate the principle

of making extensive preliminary surveys by not seeking out all known research studies and experiences before completing the design and proposing a project. Until there is this degree of professional commitment, persons conducting studies will continue to waste priceless human and material resources to "rediscover America."

√ . . . While professionals talk about interdisciplinary working relationships among vocational and practical arts fields, much research that should involve more than one field is carried on in isolation from the others.

√ . . . Specialists in one field should withhold the making of decisions affecting another field in which they have limited over-all facts, experience or responsibility.

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- **DEMONSTRATIONS**
- **INSTITUTES**

Note: The inclusion of a report in this issue is not to infer that the principal investigator classified the project this same way or that the findings or results are not applicable to other levels, programs, or services in vocational education.

Subsequent issues of "Research Visibility" will report changes as (a) new projects are approved, (b) other completed manuscripts are reviewed, (c) additional abstracts are made available, and (d) further information is received.

VOCATIONAL EDUCATION IS PEOPLE . . . WITH EDUCATIONAL NEEDS BEYOND THE HIGH SCHOOL

*RESEARCH, DEMONSTRATIONS, AND INSTITUTES (reported in this issue)

Topic One: ACCESSIBILITY TO AREA PROGRAMS

• 2:1 "Vocational Training for Library Technicians: A Survey of Experience to Date" by Martinson, John. Institute for Advancement of Medical Communications, Bethesda, Md. (Project # 5-0033) (VT # 002 448)

• 2:2 "A Two-Week Pilot Study in Advanced Instrumentation for In-Service Technical Instructors" by Larson, Milton E. Rutgers—The State University, New Brunswick, N. J. (Project # 5-0062) VT # 003 374

• 2:3 "An Eight Week Summer Institute Training Program to Train Instructors of Instrumentation Technology" by Ziol, Frank J. Pasadena City College, Pasadena, Calif. (Project # 6-2142) VT # 003 373

• 2:4 "Program for Technical Communications Training Institute for Technical Education Teachers" by Weisman, Herman M. Colorado State University, Ft. Collins, Colo. (Project # 5-0093) (VT # 002 202)

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Topic Three: FORCES INFLUENCING QUALITY STANDARDS

• 2:8 "The Influence of Industrial Arts Experience on Grades Earned in Post-High School Trade and Technical Curriculums" by Moss, Jerome Jr. University of Minnesota, Minneapolis, Minn. (Project # 5-0012) (VT # 002 141)

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• 2:15 "A Vocational Technical Institute Developmental Program for Commercial Fisheries" by Shontz, David F. and Holmsen, Andreas. University of Rhode Island, Kingston, R.I. (Project # 6-2166)

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• 2:17 "A Study of the Effectiveness of Federally Supported Business Data Processing Summer Institutes" by Wall, Lewis E. Colorado State University, Fort Collins, Colo. (Project # 6-2437)

• 2:18 "Development of a Post-High School Program to Train Automated Process Technicians" by Sissow, Robert L. School District of Philadelphia, Phila., Pa. (Project # 7-0084)

• 2:19 "Institute on Post High School Programs in Home Economics Education Utilizing the Resource Guide, Care and Guidance of Children" by Dales, Ruth J. Florida State University, Tallahassee, Fla. (Project # 7-0382)

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1:90(B) . . .' Course Outline: ("Electro-Mechanical Installation and Repair Cluster") 1966, 266 pages (VT 002 166)

- 1:90(C) . . .' Course Outline: (Metal Forming and Fabrication Cluster") 1966, 266 pages (VT 002 167)

Topic Four: CURRICULUM PLANNING

- 1:65 "Feasibility of A Systematic Study of Manpower and Educational and Training Programs of Selected Health Occupations" by Polliard, Forbes W. Indianapolis Hospital Development Association, Indianapolis, Ind. (Project # 6-2444)

Topic Five: CURRICULUMS TO MEET NEEDS

- 1:12 "Approaches to Use in Assessing Needs for, Content of, and Certain Factors to be Considered in Preparing for Gainful Employment" by Cozine, June. (Project # 5-0026) ERIC # ED 010 004, EDRS MF-$0.18, HC-$3.24
- 1:13 "An Experimental Vocational Education Institute for the Preparation of Teacher Coordinators of Newly Emerging High School Vocational Programs" by Samson, Harland E. University of Wisconsin, Madison, Wis. (Project # 5-0092) 1966, 144 pages. ERIC # ED 010 500; EDRS MF-$0.27 HC-$5.76
- 1:15 "Development of Marketable Typing Skill: Sensory Processes Underlying Acquisition" by West, Leonard J. City University of New York, N. Y. (Project # 5-8434) 1966, 27 pages. ERIC # ED 010 012; EDRS MF-$0.09 HC-$1.08
- 1:91 "Flexibility for Vocational Education Through Computer Scheduling" by Allen, Dwight. Stanford University, Stanford, Calif. (Project # 5-0034) 1966, 38 pages. ERIC # ED 010 293; EDRS MF-$0.09 HC-$1.52
- 1.92 "Appraisal of Curriculum Materials Developed for Use by Secondary Home Economics Teachers" by Horn, Fern. University of Minnesota, St. Paul, Minn. (Project # 6-8141) 1966, 158 pages. ERIC # ED 010 440; EDRS MF-$0.27 HC-$6.32
- 1:93 "Development of a Scale to Measure Interests in Agriculture Occupations" by Hamilton and Hill. Cornell University, Ithaca, N. Y. (Project # 6-8304) (VT # 002 710)
- 1:94 "Review and Syntheses of Research" in . . .

1:94 (A) ". . . Agricultural Education" by Warmbrod, J. Robert and Phipps, Lloyd J. (VT # 002 318)

1:94 (B) ". . . Business and Office Occupations Education" by Lanham, Frank W. and Trytten, J. M. (VT # 002 334)

1:94 (C) ". . . Distributive Education" by Meyer, Warren G. and Logan, William B. (VT # 002 333)

1:94 (D) ". . . Home Economics Education" by Chadderdon, Hester and Fanslow, Alyce M. (VT # 002 319)

1:94 (E) ". . . Industrial Arts Education" by Streichler, Jerry (VT # 002 320)

1:94 (F) ". . . Technical Education" by Larson, Milton E. (VT # 002 228)

1:94 (G) ". . . Trade and Industrial Education" by Schaefer, Carl J. and Tuckman, Bruce W. (VT # 002 229)

Note: Projects 1:94 (A) through (G) were all prepared under direction of Robert E. Taylor, The Center for Vocational and Technical Education, The Ohio State University, Columbus, Ohio, 1966.

*ADDITIONS TO RESEARCH, DEMONSTRATIONS, INSTITUTES (in process)

Topic One: PROGRAM ACCESSIBILITY

- 1:95 "New Horizons in Developing Vocational Education Programs in Small High Schools in Small Districts" by Ertel, Kenneth. University of Idaho, Moscow, Idaho. (Project # 5-0143)
- 1:96 "Flexibility for Vocational Education Through Computer Scheduling—Phase Two" by Allen, Dwight W. Stanford University, Stanford, Calif. (Project # 6-2409) 1966, 38 pages. ERIC # ED 010 293; EDRS MF-$0.09 HC-$1.52

Topic Five: CURRICULUMS TO MEET NEEDS

- 1:97 "An Investigation of Changes in Gregg Shorthand" by Gaffga, Ruth H. New York University School of Education, Washington Square, New York, N.Y. (Project # 5-8270)
- 1:98 "Development and Evaluation of a One-Semester Stenography Course; Phase One of a Two-Phase Program" by McMurtrie, Patsy. San Francisco State College, San Francisco, Calif. (Project # 5-8277) 1966, 110 pages. ERIC # ED 010 256; EDRS MF-$0.18 HC-$4.40.
- 1:99 "Development of an Instrument for Evaluation of Social Readiness for Employment" by Bates, Zelpha. California State College at Long Beach, Long Beach, Calif. (Project # 5-8462)
- 1:100 "Comparing the Effectiveness of Two Methods of Teaching Agricultural Science to Students in Vocational Agriculture" by Williams, Twyman G., Jr. Vacaville Union High School District, Vacaville, Calif. (Project # 6-1407)
- 1:101 "Summer Institute for Teachers of Ornamental Agriculture in Midwestern Sector of the United States" by Hemp, Paul. University of Illinois, Urbana, Ill. (Project # 6-1538)
- 1:102 "Pilot Study of a Program in Home Economics which Prepares for Gainful Employment" by Cozine, June. Oklahoma State University, Stillwater, Okla. (Project # 6-1576)
- 1:103 "Instructional Program for Teachers of Occupational Training Programs Utilizing Home Economics Skill and Knowledge" by Gorman, Anna M. University of Kentucky, Lexington, Ky. (Project # 6-1669)
- 1:104 "Effects of Internal Pacing on Acquisition of Typing Skills" by West, Leonard. The City University of New York, New York, N. Y. (Project # 6-2116)
- 1:105 "Child Development Training Programs for Vocational Home Economics Teachers" by Sulek, Helen. University of Nebraska, Lincoln, Nebr. (Project # 6-2186)
- 1:106 "A Training Institute for Teachers of Technical Programs in Agriculture" by Sidney, Howard. State University of New York, Cobleskill, N. Y. (Project # 6-2662)
- 1:107 "Form of and Procedures for Taking Dictation for Initial Stenographic Secretaries" by Tonne, Herbert E. State University of New York, Albany, N.Y. (Project # 6-2981)
- 1:108 "The Efficacy of Home Economics Courses Designed to Prepare Disadvantaged Pupils for Their Homemaker Family Member Role and the Dual Roles of Homemaker and Wage Earner" Part C by Nelson, Helen Y. Cornell University, Ithaca, N.Y. (Project # 6-3049)
- 1:109 "The Efficacy of Home Economics Courses Designed to Prepare Disadvantaged Pupils for their Homemaker Family Member Role and the Dual Roles of Homemaker and Wage Earner" Part B by Haas, Mary Helen. The Ohio State University Research Foundation, Columbus, Ohio. (Project # 6-3050)
- 1:110 "Increasing Knowledge in Social Science Among Agricultural Educators" by Pesson, L. L. Louisiana State University, Baton Rouge, La. (Project # 6-8226)
- 1:111 "Pilot Programs in High Schools to Prepare Students for a Wide Spectrum of Computing, Recording, and Bookkeeping Occupations" by Stewart, Jeffery R. Virginia Polytechnic Institute, Blacksburg, Va. (Project # 6-8318)
- 1:112 "Unemployment and Evaluation in Instructional Units for Teaching Profit Maximizing Principles in Vocational Agriculture" by Baker, Richard. Ohio State University, Columbus, Ohio (Project # 6-8763)
- 1:113 "Effects of Mechanically Forcing Copying Speeds on Learning of Elementary Gregg Shorthand" by Edwards, Ronald. University of Michigan, Ann Arbor, Mich. (Project # 6-8810)
- 1:114 "Effective Communication in Vocational Agriculture" by McCormick, Robert W. Ohio State University, Columbus, Ohio. (Project # 6-8932)
- 1:115 "National Seminar for the Development and Improvement of Vocational Agriculture Programs for Young Farmers" by Rodgers, John. Virginia Polytechnic Institute, Blacksburg, Va. (Project # 7-0601)
- 1:116 "A Planning Study to Determine the Feasibility of Developing a New Business and Office Education Curriculum," Ohio State University, Columbus, Ohio. (Project # 7-1223)

Topic Six: PROGRAM GROWTH

- 1:117 "A Pilot Study of a Work Opportunity Center" by Nord, Raymond V. Minneapolis Public Schools, Minneapolis, Minn. (Project # 5-0187)
- 1:118 "Study of Youth in High School at Work and Unemployed" by Kahn, Robert. University of Michigan, Ann Arbor, Mich. (Project # 5-0196)
- 1:119 "A Study of Work Orientations of Teenagers" by Smity, Robert. University of Michigan, Ann Arbor, Mich. (Project # 5-1008)
- 1:120 "A One-Week Workshop for Supervising Teachers in Agricultural Occupations" by Benson, Herbert. Colorado State University, Fort Collins, Colo. (Project # 6-1455)
- 1:121 "Pilot Training Project Based On Directed Occupational Experiences for Teachers of Distribution and Marketing" by Meyer, Warren G. University of Minnesota, Minneapolis, Minn. (Project # 6-1594)
- 1:122 "Work Instruction Programs for the Food Industry" by Konz, Stephan A. Kansas State University, Manhattan, Kans. (Project # 6-2159)
- 1:123 "An Eight-Week Seminar in an Introduction to Numerical Control on Two-and-Three-Axis Machine Tools for Vocational and Technical Machine Tool Instructors" by Carlson, Arthur and Boldt, Milton. Milwaukee Vocational and Technical Schools, Milwaukee, Wis. (Project # 6-2332)
- 1:124 "An Investigation of the Operational Aspects of Integrated Cooperative Vocational Education Programs" by Mankenbert, Don. Iowa City Community School District, Iowa City High School, Iowa City, Iowa. (Project # 6-2463)
- 1:125 "A Conference on New Educational Curricula for Sub-Professional Personnel in Health Services" by Nangle, Grace. State Department of Education, Boston, Mass. (Project # 6-2664)
- 1:126 "Work Study Programs: Conduct and Consequences" by Schill, William J. University of Illinois, Urbana, Ill. (Project # 6-2851)
- 1:127 "Seminar on Shop and Laboratory Planning for Vocational Education" by McMahon, Gordon C. State University College at Oswego, N. Y. (Project # 6-8530)

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